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For Your Information

Iowa Farm Science Editorial Board

For your Interest

grains

Oat Breeders Improve Varieties, Study Crown Rust Resistance

EXPERIMENT Station researchers continued to improve Iowa oat varieties in 1963 and moved ahead in their battle against crown rust races. K. J. Frey, J. A. Browning, M. D. Simons, K. Sadanaga, R. E. Atkins, R. Grindeland and L. Michael took part in the project.

Part of the work, devoted to identifying prevalent crown rust races, showed that Race 290 had increased in numbers. This race can attack the Landhafer gene which when bred into oat varieties has been resistant to most rust races. The races which are unable to attack the Landhafer gene, however, declined in importance in 1963.

The researchers also report rapid progress on multiline varieties which will be resistant to more than one rust race and thus better able to resist rust attack than present pure line varieties. Experiments now have moved into the final stage of greenhouse testing.

At the same time, the researchers have found that an oat strain separated from seeds imported from Israel is resistant to the highly damaging rust Race 264. This is the first oat strain of its particular genetic make-up that is resistant to the race. And the variety can be easily crossed with varieties presently being grown.

The Iowa State oat breeders also have used mechanical selection methods on mass oat populations during the last five years. They clipped the tops of the heads off tall plants with a lawn clipper. Then at harvest, they took only the top four inches of the remaining heads.

As a result, the average height of the plants was reduced a half inch each year, and genetic variability among the plants was reduced 50 percent in the five years. The reduced height, in turn, resulted in earlier heading and increased yields.

farm buildings and equipment

Find What Sets Turkey Prices

FARM TURKEY prices are determined mainly by consumer income, marketing costs, supply of red meat and the supply of turkeys, reports economist George W. Ladd. The principal determinant of turkey supply in a particular year is the turkey-feed price ratio of the previous year, he says.

Influence of Rising Prices On Farm Output

ANALYSIS of investments in agriculture indicates that a sustained rise of 1 percent in prices that farmers receive increases the productive farm assets by 0.04 percent during the first or second year of the price rise. Farm assets rise 0.07 percent in 3 to 4 years and 1 percent over 20 years of rising farm prices.

Thus, a policy to increase farm prices has little short run influence on farm output through investment in durable capital. But in the long run, such investment is more responsive to prices than is commonly believed, and it may substantially influence farm output.

Because farm incomes and prices haven't been favorable for buying durable goods, only 6 percent of the estimated 40 percent rise in the annual investment from 1926 to 1959 is attributed to financial influences. The remaining percentage is explained by technological changes, increased convenience, adaptability of durable inputs and farmers' growing awareness of the labor-saving features of durable investment. The increased investment also is attributed to long run adjustments to prices and the desire by farmers to preserve a stable ratio of farm output to durable capital.

By 1965, the economists predict that stocks of productive farm assets will increase to 5.5 percent more than the 1960 levels. This implies that, if farm income is maintained, so will remain: (1) the difficulty of obtaining capital for beginning farmers, (2) large overhead costs, (3) pressures for moving labor out of agriculture and (4) other problems associated with increased capitalization.

Those analyzing the agriculture investments include Earl O. Heady, Luther Tweeten, Roger Maulldon and Lou Auer.

Cite Operator Traits For Efficient Farm Management

OBSERVATIONS from the operation of a 640-acre, well-organized farm indicate that efficient farm operation depends on the operator's ability for organizing the farming program, proper maintenance of machinery, effective use of custom operators and proper control of the machine inventory.

Experiment Station personnel conducting the study from which those observations were made include C. W. Bockhop, S. J. Marley, Hobart Beresford, David Link, Jim Frisby, Gordon Ball and Frank Schaller.

The over-all study deals with efficient use of farm machines, power units and efficient machine systems for crop production. The results of the tests should provide a basis for determining the potential efficiency of farming systems.

livestock

Evaluate Causes Of Off-Flavored Milk

GENETIC selection can reduce off-flavors in milk. But first, all available management practices which prevent the flavors should be fully utilized, four dairy science researchers report.

A. E. Freeman, J. L. Lush, A. R. Porter and J. K. Hillers studied the flavors in 18,622 monthly samples of milk taken from 336 cows with sires of five different breeds.

They found the season of the year accounted for 36 percent of the variation in flavor scores. This variation, they add, comes from the varying feeding and management practices of different seasons. Flavor variations also were caused by differences in age, stage of lactation, breed and opinion of the judges tasting the milk.

The researchers say flavor score and other flavor characteristics are affected by each individual cow. However, most of these traits appear to be only slightly heritable. Therefore, management practices to rid the milk of off-flavors should be fully carried out before genetic improvement is attempted.

special subjects

Management Of Cattail In Marshes

CATTAIL provides the major plant growth in midwestern marshes, serves as cover for waterfowl and fur bearing animals to nest and rear young, and as the major food of our most important furbearer, the muskrat. However, cattail growth is difficult to manage, often becoming either too dense or too thin.

Milton W. Weller is trying to learn more about the management of cattail by studying methods of reducing cattail numbers and methods of increasing its rate of germination and survival.

Weller was able to reduce cattail stands by cutting, burning or use of herbicides. In a cutting experiment, cattail cut in the fall of 1961 still was 70 to 80 percent less dense during the second growing season after cutting than originally. This growth reduction was not affected by drouth conditions which lowered the water level below the cattail stubble.

However, another experiment showed the importance of flooding the cut stubble in the year following cutting. Sixteen circles were cut in the cattail during the winter using a tractor-drawn mower operated on ice. The cattail grew so fast after the water level fell below the stalks that the openings soon were impossible to find.

In a third experiment, cattail cut below the water surface failed to grow back even though cuttings were made during the peak of the growth period. Cattail shoots cut at or above the surface did grow back, however.

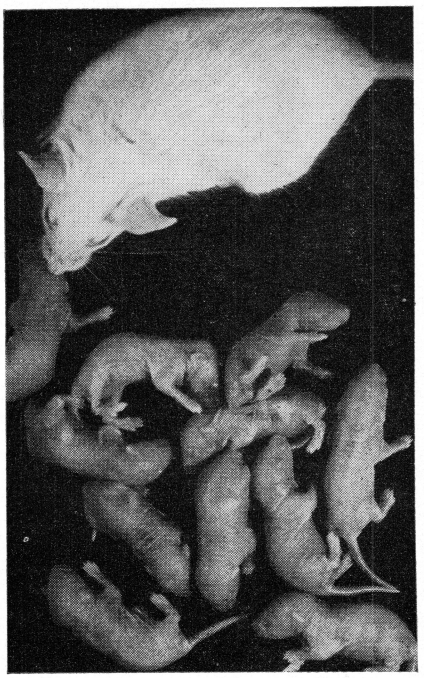
In another phase of the study, Weller conducted field and greenhouse studies to find methods of increasing germination and survival. Moisture is the main factor influencing growth and germination, and the re-establishment of cattail stands is dependent upon the lowering of water levels to create shallow water areas.

Geneticists Study Mice For Irradiation Effects

TWENTY-THREE generations of mice survived exposure to gamma X-ray irradiation throughout their life spans and only one mouse in some 20,000 shows a visible genetic mutation in one phase of an Atomic Energy Commission experiment conducted by John W. Gowen and Janice Stadler of the Genetics Department. The irradiation dosages were received at low rates but accumulated to large amounts.

Each mouse received an average of 1,616 roentgens (the international unit of measure for X-rays) during his life span. And when fertilization of the sixth generation mice took place, the previous ancestral generations of mice already had been exposed to 1,289 roentgens.

This amount of radiation is thousands of times larger than the irradiation from fallout. The total dosage is two to three times larger than the amount of irradiation needed to cause death if the mouse was exposed to the entire amount at once.



One litter of the 23rd generation of mice exposed to low level irradiation.

Also the radiation is 25 times greater than the amount needed to sterilize 50 percent of the breeding females and 4 times more than needed to sterilize 50 percent of the breeding males.

On the other hand, the life span of the mice became shorter as each succeeding generation was exposed to the radiation. For four of the five strains of mice studied, the exposure cut about 20 days from the life of each generation. About nine days were cut from the lives of the fifth strain.

A related life span study showed that the lives of mice became increasingly shorter when the embryos had been exposed to increasing amounts of acute radiation before birth. The irradiation dosages were given at high rates but accumulated to much less total quantity than in the study given above.

With a 20 roentgen exposure, female life span decreased 15 percent and male life span 3 percent. With 80 roentgens, female life span decreased 18 percent and male life span 7 percent. At a 160 roentgen exposure, females lived 27 percent shorter lives. Finally, a 320 roentgen exposure cut the lives of females 70 percent and males 57 percent.